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UNITED STATES DEPARTMENT OF AGRICULTURE
WEATHER BUREAU
Washington

Office of the Chief

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CIRCULAR

EQUIVALENT POTENTIAL TEMPERATURE AND
SPECIFIC HUMIDITY TO BE ADDED TO AIRPLANE WEATHER OBSERVATION REPORTS

Beginning October 15, 1935, the equivalent potential temperature and specific humidity for each significant level of airplane weather observations will be transmitted in the daily teletype and radio reports.

The equivalent potential temperature will be indicated to the nearest whole degree absolute ($^{\circ}\text{C} + 273$) and will follow the relative humidity in the message.

The specific humidity will follow the equivalent potential temperature in the message and will be obtained to one decimal place in grams of water vapor per kilogram of moist air. However, the decimal point will be omitted from the teletype report, the last figures always being deciphered as tenths, i. e., of the unit, g./kg. When the figure to the right of the decimal point is zero, the final cipher will be transmitted; e. g., 16.0 will be transmitted as 160. When the numerical value of the specific humidity is less than 1.0, the zero to the left of the decimal point will be transmitted; e. g., 0.7 will be transmitted as 07.

Following are some examples and the corresponding data to be transmitted:

Equivalent potential temperature <u>°A. 1/</u>	Specific humidity <u>g./kg.</u>	<u>Transmitted by teletype or radio</u>	
		Equivalent potential temperature	Specific humidity
240	0.7	40	07
267	1.4	67	14
273	3.0	73	30
306	6.7	06	67
365	18.9	65	189

1/ First and last examples represent the approximate extremes of equivalent potential temperature and therefore the omission of the initial figure 2 or 3 in the transmission should not be confusing.

Stations telegraphing their APOBS in word code will indicate the equivalent potential temperatures and specific humidities for each significant level by two words taken from the "Pressure-Temperature" words, pp. 19-28, Weather Code 1931. These words will follow the Temperature-Humidity word in the message. The first of these additional words will indicate the equivalent potential temperature as shown in the following examples: 241°A.; double the digits 24 and indicate 48 in the first code element; indicate the digit 1 in the second code element. Thus the code word GOODBYE will indicate 241°A. Similarly, 266°A. will be indicated by MANUAL; 293°A., MOURNFUL; 310°A., NAIL; 335°A., NISMUR; etc

The second word will indicate the specific humidity as shown in the following examples:

16.9 g./kg.; double the digits 16 and indicate 32 in the first code element; indicate the digit 9 in the second code element. Thus the code word FATTY will indicate 16.9 g./kg. Similarly, 23.2 g./kg.

will be indicated by GIDDY; 9.3 g./kg., BOASTFUL; 0.8 g./kg., USURP;
0.1 g./kg., UNBUCKLE; etc.

The circular dated December 1, 1934, Instructions for Daily
Transmission of Airplane Weather Observations, is amended accordingly.

Instructions for obtaining equivalent potential temperatures
and specific humidities for inclusion in the daily transmission of
APOBS are being furnished the stations where airplane observations are
made.

C. C. Clark,
Acting Chief of Bureau.

THE [illegible] OF [illegible]

BY [illegible]

CONTAINING [illegible]

IN [illegible]

AND [illegible]